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REMARKS

Claims 1-35, all the claims pending in the application, stand rejected on prior art grounds. Applicants respectfully traverse these rejections based on the following discussion.

I. The Prior Art Rejections

Claims 1-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Venkayala, et al. (U.S. Publication No. 2003/0212679), hereinafter referred to as Venkayala, in view of Rosen, et al. (U.S. Patent No. 6,513,025), hereinafter referred to as Rosen. Applicants respectfully traverse these rejections based on the following discussion.

The claimed invention provides a method of searching data in databases using an ensemble of models, wherein a selected sub-ensemble of models is applied in place of the ensemble. In the rejection, the Office Action argues that Venkayala discloses ordering models and selecting a sub-ensemble of models. However, the "class values" of Venkayala (which the Office Action asserts teaches the sub-ensemble of the claimed invention) have nothing to do with a sub-ensemble of models. Moreover, the class values are not selected prior to the application of the model, wherein the selected class values are applied in place of the model. In addition, the "scoring of models" in Venkayala does not teach ordering, ranking, or otherwise sorting models. Instead, the scoring step applies a trained model to make predictions based on data. Therefore, as explained in greater

detail below, Applicants respectfully submit that the prior art of record does not teach or suggest the claimed invention.

The Office Action argues that Venkayala teaches selecting a sub-ensemble of models that meets a given level of confidence (Office Action, p. 3, para. 1). Such features are defined in independent claims 1, 8, 15, 21, 28, and 35 using similar language.

More specifically, the Office Action argues that the "class values" of Venkayala teach the sub-ensembles of the claimed invention. In support for this contention, the Office Action cites paragraph 0024 of Venkayala, which assertedly discloses selecting class values that meet a selection criteria presented in prediction parameters.

However, the "class values" have nothing to do with a sub-ensemble of models. Instead, the "class values" represent a parameter or characteristic of "output", wherein the output is produced via a multi-category apply operation in a data mining system. Specifically, as discussed in paragraph 0006 of Venkayala, the present invention is a system, method, and computer program product that provides a multi-category apply operation in a data mining system that *produces output with multiple class values* and their associated probabilities.

As further discussed in paragraph 0007 of Venkayala, a method is provided for multi-category apply in a data mining system comprising the steps of receiving input data for scoring including a plurality of rows of data applied to a data mining model and *generating multi-category apply output with a plurality of predicted class values* and their associated probabilities based on the received input data and a selection criterion. The step of generating multi-category apply output may comprise the steps of generating

input data tables including active attributes and source attributes, evaluating probabilities of categories of a target attribute to determine those meeting the selection criterion, and *generating an output data table including a plurality of class values* of the target attribute and their associated probabilities, the selected class values having probabilities meeting the selection criterion.

Applicants submit that the generated "output" having multiple "class values" has nothing to do with a sub-ensemble of models (that is used in place of the ensemble of models). Instead, the output 122 having multiple class values is generated using scored data 118, wherein the output 122 having the class values is produced after the application of the model 110.

Therefore, the class values are not selected until after the model 110 is applied. Specifically, as described in paragraph 0022 and Fig. 1 of Venkayala, trained model 110, prediction parameters 114, and scoring data 116 are input to apply step 112. Trained models 110 include information defining the model that was generated by model building step 102. Following this, as described in paragraph 0024 and Fig. 1 of Venkayala, scored data 118 is input to *multi-category apply step 120*, which evaluates the probabilities associated with the class values and *selects a plurality of class values* and their associated measures, such as probabilities.

Thus, Venkayala clearly teaches selecting the class values (step 120) *after* the application of the model (step 112). Accordingly, Venkayala cannot use the selected class values (which the Office Action asserts teaches the sub-ensemble of the claimed invention) in place of the model 110.

To the contrary, the claimed invention defines "selecting a sub-ensemble" (of the ensemble of models) and "applying said sub-ensemble, in place of said ensemble" (independent claims 1, 8, 15, 21, 28, and 35).

Therefore, the "class values" of Venkayala cannot teach the "sub-ensemble" of the claimed invention because the class values are selected after the model is applied; the class values are not selected prior to the application of the model, wherein the selected class values are applied in place of the model (see Fig. 1, steps 112 and 120, of Venkayala).

In other words, Venkayala cannot teach selecting class values and applying the class values in place of the model because, at the time the class values are selected, the model has already been applied to obtain scored data 118. Moreover, it is the scored data 118 (obtained from application of the model) that is used to select the class values.

As such, it is Applicants' position that Venkayala fails to teach or suggest the claimed feature of "selecting a sub-ensemble of said models ... and applying said sub-ensemble, in place of said ensemble, to an example to make a prediction" as defined by independent claims 1, 8, 15, 21, 28, and 35.

In addition, the Office Action argues that Venkayala teaches ordering models within an ensemble of models in order of prediction accuracy (Office Action, p. 3, para. 1). Such features are defined in independent claims 1, 8, 15, 21, 28, and 35 using similar language.

In support of its contention, the Office Action cites paragraph 0017 Venkayala, wherein the Office Action argues that the "scoring of models" orders the models based on prediction accuracy.

Applicants respectfully disagree with such a conclusion. Instead, the "scoring of models" in Venkayala teaches a method step of applying a trained model to make predictions based on data.

More specifically, as discussed in paragraph 0020 of Venkayala, apply (scoring) step 112 involves using the deployed trained model 110 to make predictions or recommendations based on new input data for scoring 116. If the model type is supervised and once a model is built on a set of records whose class values are known a priori, it can be used to predict (or score) the class value of a record whose class is not known. This operation is also known as apply because the new records are applied to the model. The result of apply operation includes the scores (predicted class values) with associated measures such as probability and rank.

As further discussed in paragraph 0022 and Fig. 1 of Venkayala, the trained model 110, prediction parameters 114, and scoring data 116 are input to apply (scoring) step 112. Trained models 110 include information defining the model that was generated by model building step 102. Prediction parameters 114 are parameters that are input to the apply step 112 to transform the scoring data 116 against trained model 110 and are input to the selection and prediction/recommendation step 120 to control the selection of the scored data 118 and the generation of predictions and recommendations 120. Depending on the implementation, the apply step 112 and the generation of predictions

and recommendations may merge into a single step where the scored data 118 is handled transparently.

Nothing within Venkayala, including the portions cited by the Office Action, teaches ordering, ranking, or otherwise sorting models. Instead, the "scoring" step of Venkayala merely combines prediction parameters, scoring data, and a trained model to create scored data (see items 114, 116, 110, 112, and 118 of Fig. 1). Therefore, it is Applicants' position that Venkayala fails to teach or suggest the claimed feature of "ordering models within said ensemble in order of prediction accuracy" as defined by independent claims 1, 8, 15, 21, 28, and 35.

Therefore, it is Applicants' position that the cited prior art, either individually or in combination, does not teach or suggest many features defined by independent claims 1, 8, 15, 21, 28, and 35 and that such claims are patentable over the prior art of record. Further, it is Applicants' position that dependent claims 2-7, 9-14, 16-20, 22-27, 29-34 are similarly patentable, not only because of their dependency from a patentable independent claims, but also because of the additional features of the invention they defined. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections.

II. Formal Matters and Conclusion

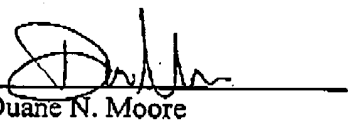
With respect to the rejections to the claims, the claims have been amended, above, to overcome these rejections. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections to the claims.

In view of the foregoing, Applicants submit that claims 1-35, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary. Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 50-0510.

Respectfully submitted,

Dated: 10/12/06



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